

CLAIM LIST

This claim list replaces all prior claim lists in the application.

1. (Previously Presented) A method for downloading streaming data comprising:
establishing connections between a user client and a plurality of nodes;
dividing streaming data into a plurality of blocks for sequential download, the blocks including first and second blocks;
dividing the first block into a plurality of sub blocks;
sending a request to the nodes to download assigned ones of the sub blocks to the user client, in parallel;
monitoring the downloading of the sub blocks from the nodes to the user client, through the established connections; and
reassigning only un-downloaded ones of the sub blocks, based on the monitoring, from a first one of the nodes to a second one of the nodes, if the first node is determined to have a bad connection, and if the second node finishes downloading before the first node,
wherein the sending, the monitoring, and the reassigning are repeated for downloading sub blocks included in the second block, when downloading of the first block is completed.
2. (Canceled)
3. (Previously Presented) The method of claim 1, wherein the monitoring of the downloading comprises determining which of the nodes are finished downloading.

4. (Previously Presented) The method of claim 1, wherein the sub blocks are assigned to the nodes based on a round-trip time with each of the nodes, an average download speed from each of the nodes, or a combination thereof.

5 - 7. (Cancelled)

8. (Previously Presented) The method of claim 1, wherein if the first node has a lowest download rate among the connected nodes, the reassigning is based on the download rate of the first node and the number of un-downloaded sub blocks of the first node.

9. (Previously Presented) The method of claim 1, further comprising storing information of nodes with which the connection establishment failed in a black list queue.

10. (Previously Presented) The method of claim 1, further comprising receiving node state information, wherein the sub blocks is determined using the node state information.

11. (Previously Presented) The method of claim 1, wherein the sub blocks to be downloaded from each of the nodes are assigned according to: state information of the nodes in an initial state of download, after a determination of download speed from each of the nodes; and by using a connection state valuation index that is calculated using a round-trip time with each of the nodes, an average download speed from each of the nodes, or a combination thereof.

12. (Previously Presented) The method of claim 10, wherein the connection establishment with the nodes is performed using state information of the nodes.

13. (Previously Presented) The method of claim 1, further comprising determining a downloading error using a checksum value of the downloaded sub blocks.

14. (Previously Presented) The method of claim 1, further comprising sending a request to download the reassigned sub blocks.

15. (Previously Presented) The method of claim 1, further comprising downloading streaming data by connecting to a singular server, if the sub block downloading fails.

16-38. (Cancelled)

39. (Previously Presented) A non-transitory computer-readable storage medium comprising an executable program, which when executed, downloads streaming data by performing the following steps:

- establishing connections between a user client and a plurality of nodes;
- dividing streaming data into a plurality of blocks for sequential download, the blocks including first and second blocks;
- dividing the first block into a plurality of sub blocks;
- sending a request to the nodes to download assigned ones of the sub blocks to the user client, in parallel;
- monitoring the downloading of the sub blocks from the nodes to the user client, through the established connections; and

reassigning only un-downloaded ones of the sub blocks, based on the monitoring, from a first one of the nodes to a second one of the nodes, if the first node is determined to have a bad connection, and if the second node finishes downloading before the first node,

wherein the sending, the monitoring, and the reassigning are repeated for downloading sub blocks included in the second block, when downloading of the first block is completed.

40. (Canceled)

41. (Previously Presented) The storage medium of claim 39, wherein the sub blocks are assigned based on a connection state valuation index that is calculated using a roundtrip time with each of the nodes, an average download speed from each of the nodes, or a combination thereof.

42. (Cancelled)

43. (Previously Presented) The storage medium of claim 40, further comprising receiving node state information, wherein the sub blocks are assigned to each of the nodes based on node state information.

44. (Previously Presented) The storage medium of claim 43, wherein the establishing of the connection with the nodes is performed using the node state information.

45. (Previously Presented) The storage medium of claim 39, wherein the sub blocks are assigned based on: state information of the nodes in an initial state of download, after a determination of download speed from each of the nodes; and by using a connection state

valuation index that is calculated using a round-trip time with each of the nodes, an average download speed from each of the nodes, or a combination thereof.

46. (Cancelled)

47. (Previously Presented) The storage medium of claim 39, wherein the monitoring of the downloading comprises monitoring the completion of downloading for each of the nodes.

48. (Previously Presented) The storage medium of claim 47, wherein the first node has the lowest download rate among the nodes.

49. (Previously Presented) The storage medium of claim 39, wherein the reassigning of the sub blocks is based on the download rate and the number of un-downloaded sub blocks assigned to the first node.

50. (Previously Presented) The storage medium of claim 39, further comprising storing information of nodes with which the connection establishment failed, in a black list queue.

51. (Previously Presented) The storage medium of claim 39, further comprising determining a downloading error using a checksum value of the downloaded sub blocks.

52. (Previously Presented) The storage medium of claim 39, further comprising sending a request to download the reassigned sub blocks.

53. (Previously Presented) The storage medium of claim 39, further comprising downloading streaming data by connecting to a singular server, if the sub block downloading fails.

54. (Cancelled)